

Claims:

1. Pharmaceutical composition, comprising:

- an antigen,
- a type 1 inducing adjuvant and
- Alum,

with the proviso that the type 1 inducing adjuvant is not an oligodeoxynucleotide containing a CpG motif.

2. Pharmaceutical composition according to claim 1, characterized in that the antigen is a viral, parasitic or bacterial antigen.

3. Pharmaceutical composition according to claim 2, characterized in that the viral antigen is a hepatitis viral antigen, especially a hepatitis A, hepatitis B, hepatitis C, hepatitis D, HIV-, HPV-, or influenza antigen.

4. Pharmaceutical composition according to any one of claims 1 to 3, characterized in that the type 1 inducing adjuvant is selected from the group consisting of a polycationic polymer, lipid particle emulsions, especially MF59, stable formulations of squalene and pluronid polymers and threonyl analogs of MDP (syntex adjuvant formulation (SAF), monophosphoryl Lipid A (MPL), saponins, especially QS21, an immunstimulatory oligodeoxynucleotide (ODN), with the proviso that the immunstimulatory oligodeoxynucleotide is not an oligodeoxynucleotide containing a CpG motif, and combinations thereof.

5. Pharmaceutical composition according to claim 4, characterized in that the said immunstimulatory ODN is selected from the group consisting of a deoxynucleotide comprising deoxyinosine and/or deoxyuridine residues; a deoxynucleotide comprising at least one 2'-deoxycytosine-monophosphate or -monothiophosphate 3'-adjacent to a 2'-deoxyinosine-monophosphate or -monothiophosphate, especially a deoxyinosine-deoxycytosine 26-mer; and an ODN based on inosine and cytidine.

6. Pharmaceutical composition according to claim 4,

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characterized in that said polycationic polymer is selected from the group consisting of a synthetic peptide containing at least 2 KLK motifs separated by a linker of 3 to 7 hydrophobic amino acids, preferably a peptide with the sequence KLKLLLLLLKLK; a polycationic peptide, especially polyarginine, polylysine and an antimicrobial peptide, especially a cathelicidin-derived antimicrobial peptide.

7. Use of Alum for the preparation of a drug for enhancing an antigen-specific type 1 immune response against an antigen in the presence of a type 1 inducing adjuvant.

8. Use according to claim 7, characterized in that said antigen is a viral, parasitic or bacterial antigen.

9. Use according to claim 8, characterized in that the said viral antigen is a hepatitis viral antigen, especially a hepatitis A, hepatitis B, hepatitis C, hepatitis D, HIV-, HPV-, or influenza antigen.

10. Use according to claim 7, characterized in that the Th1 adjuvant is selected from the group consisting of a polycationic polymer, lipid particle emulsions, especially MF59, stable formulations of squalene and pluronid polymers and threonyl analogs of MDP (syntex adjuvant formulation (SAF), monophosphoryl Lipid A (MPL), saponins, especially QS21, an immunostimulatory oligodeoxynucleotide (ODN), and combinations thereof.

11. Use according to claim 10, characterized in that said immunostimulatory oligodeoxynucleotide (ODN) is selected from the group consisting of a deoxynucleotide comprising deoxy-inosine and/or deoxy-uridine residues; a deoxynucleotide comprising at least one 2'-deoxycytosine-monophosphate or -monothiophosphate 3'-adjacent to a 2'-deoxyinosine-monophosphate or -monothiophosphate, especially a deoxyinosine-deoxycytosine 26-mer; and an ODN based on inosine and cytidine.

12. Use according to claim 10, characterized in that said polycationic polymer is selected from the group consisting of a

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synthetic peptide containing at least 2 KLK motifs separated by a linker of 3 to 7 hydrophobic amino acids, preferably a peptide with the sequence KLKLLLLLKLK; a polycationic peptide, especially polyarginine, polylysine and an antimicrobial peptide, especially a cathelicidin-derived antimicrobial peptide.

13. Use of Alum for the preparation of a vaccine with enhanced Th 1 activity.

14. Use of the combination of a Th1 adjuvant and Alum as a Th1 adjuvant.

15. An type 1 inducing adjuvant composition comprising a type 1 inducing adjuvant and alum, with the proviso that the type 1 inducing adjuvant is not an oligodeoxynucleotide containing a CpG motif.